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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/265,585	03/10/1999	PHILIP N. BENFEY	5914-066	4702

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EXAMINER

BAUM, STUART F

ART UNIT PAPER NUMBER

1638

DATE MAILED: 02/25/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/265,585	<b>Applicant(s)</b> BENFEY ET AL.	
	<b>Examiner</b> Stuart F. Baum	<b>Art Unit</b> 1638	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 December 2002.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 29-41, 44 and 45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 29-41, 44 and 45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |                                                                                                                     |                                                                             |
|---------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                    | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input checked="" type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                      | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>5 &amp; 18</u> | 6) <input type="checkbox"/> Other: _____                                    |

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### **DETAILED ACTION**

1. The amendment filed 12/10/2002 has been entered.  
  
Claims 29-41, and 44-45 are pending.  
  
Claims 42, 43, and 46 have been canceled.  
  
Claims 36, 38, and 39 have been amended.
2. Claims 29-41 and 44-45 are examined in the present office action.
3. The text of those sections of Title 35, U.S. Code not included in this office action can be found in a prior office action.
4. Rejections and objections not set forth below are withdrawn.

### ***Information Disclosure Statement***

5. The reference listed on form 1449 has not been considered as it was not provided by the Applicant. As stated in the MPEP § 1.98 (a) Any information disclosure statement filed under § 1.97 shall include: (1) A list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) A legible copy of:  
  
(ii) Each publication or that portion which caused it to be listed.

### ***Claim Rejections***

#### ***New Matter***

6. Claims 36-39 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to a genetically engineered plant over-expressing a SCARECROW protein wherein the resulting plant has thicker roots and/or straighter stems than non-engineered plants and wherein the plant's stem or hypocotyls exhibits stronger directional growth away from a gravity vector.

Applicants' recited phrases; "thicker roots and/or straighter stems" and "plant's stem or hypocotyls exhibits stronger directional growth away from a gravity vector" are not supported in the specification.

#### *Indefiniteness*

7. Claim 38 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 38, the metes and bounds of "gravity vector" have not been defined. Applicant has not defined this term in the specification.

#### *Utility*

8. Claims 29-41, and 44-45 are rejected under 35 U.S.C. 101 because the claimed invention is not supported by either a specific asserted utility or a well established utility. This rejection is maintained for the reasons of record set forth in the Official action mailed 6/5/200/. Applicant's arguments have been fully considered but they are not persuasive.

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Applicants contend that the invention can be used to “improve agronomically valuable plants” and that the isolated gene regulates a specific asymmetric division and is involved in controlling gravitropic responses in aerial structures and in controlling pattern formation in roots (page 6, 2<sup>nd</sup> paragraph). Applicants continue by stating that the isolated nucleic acid is useful to alter the root and/or stem structure, and the gravitropism or aerial structures of transgenic plants. To overcome the 101 rejection, Applicants have submitted a 1.132 Declaration of Philip N. Benfey.

In the 1.132 Declaration, Philip N. Benfey states that the ZmSCR nucleic acid is able to rescue the radial pattern defects of the scr mutants, suggesting that ZmSCR is the functional ortholog of SCR (page 2 of the 1.132 Declaration, 6<sup>th</sup> paragraph). The ZmSCR nucleic acid operably linked to the SCR promoter was transformed into scr mutant *Arabidopsis* plants. The resultant plants exhibited “a normal radial organization with a single cortex and an endodermal layer as seen in the wild type plants (page 3, 8<sup>th</sup> paragraph). Applicant concludes by stating “ZmSCR was able to complement radial defects in scr roots (page 4, top of first paragraph) and that the gravitropic response of scr mutant inflorescence stems was also restored.

The Examiner acknowledges that the ZmSCR nucleic acid can restore the wild type phenotype when transformed into a scr mutant plant. The Examiner also acknowledges that the ZmSCR nucleic acid transformed into a scr mutant plant is responsible for increasing cell division in roots and hypocotyl tissue which results in transgenic plants having thicker roots than the roots of non-transformed scr mutants. The Applicants’ results are all based on experiments with scr mutant plants and not wild type plants of any species. The Examiner asserts that Applicants have not demonstrated that ZmSCR transformed into a wild type plant will cause the

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root and hypocotyls to have increased cell divisions which cause the roots and hypocotyl of wild type plants to have increased cell layers when compared to a wild type plant not transformed with the ZmSCR nucleic acid. Even in the scr mutant plants transformed with the ZmSCR nucleic acid, the roots only exhibit the normal or wild type root anatomy. Applicants have not demonstrated that their invention will in fact increase the number of cell layers in either roots or hypocotyls of agronomically valuable plants, as stated in the specification and amendment filed 12/10/2002, which ultimately create roots that are thicker and/or stems that are straighter than non-genetically engineered wild type plants.

### ***Enablement***

9. Claims 36-39 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. This rejection is maintained for the reasons of record set forth in the Official action mailed 6/5/200/. Applicant's arguments have been fully considered but they are not persuasive.

The Applicants assert that one of ordinary skill in the art would be fully able to generate the claimed transgenic plants, particularly in view of Example 3.

The Examiner acknowledges that Example 3 teaches transforming scr mutant plants with a construct comprising the SCR gene operably linked to the SCR promoter. But, Applicants have not taught how one of ordinary skill in the art would use a scr mutant plant transformed with the before mentioned construct. In essence, how does one use a wild type plant generated

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by complementing a scr mutant plant with the SCR gene. It seems far easier to just start with a wild type plant.

10. No claims are allowed.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stuart Baum whose telephone number is (703) 305-6997. The examiner can normally be reached on Monday-Friday 8:30AM – 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson can be reached on (703) 306-3218. The fax phone numbers for the

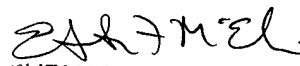
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organization where this application or proceeding is assigned are (703) 305-3014 or (703) 305-3014 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist, who may be contacted at 308-0196.

Stuart F. Baum Ph.D.

February 22, 2003

  
ELIZABETH F. McELWAIN  
PRIMARY EXAMINER  
GROUP 1800